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Michaela Daugherty

University of Nebraska - Lincoln

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A TRAIL PLAN FOR THE PRAIRIE CORRIDOR

by

Michaela Daugherty

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Abstract

South of Lincoln, Nebraska a conservation project is underway to create a passage between Spring Creek Prairie Audubon Center and Pioneers Park Nature Center. The passage way between the two parks will be restored to its natural state of tallgrass prairie. Eventually, a walking and bike path will be constructed through the corridor to join the parks. The passage has the potential to educate the surrounding community about their natural history and to connect them to their environment and their cultural heritage. Through this thesis and a systematic literature review, we examine different modes of outdoor education, interpretations, guided and unguided trail techniques, signage design, and placements to develop a trail plan for the future Prairie Corridor. Ultimately, we strive to create a self-guided trail that will provide visitors with a meaningful experience that links them to their past and facilitates a desire to preserve the natural world for future generations.

Introduction

A generational conservation effort is in the works, just south of Lincoln, Nebraska. This effort is being developed into something that will promote environmental education, preserve prairie, enhance habitat, promote tourism, add to the city's trail system and more. It's being called the Prairie Corridor. The Prairie Corridor Project is a tallgrass prairie passage and trail that will create a greenway system linking the Pioneers Park Nature Center to the Spring Creek Prairie Audubon Center in Lancaster County, Nebraska. Once abundant in the Great Plains, tallgrass prairie is now considered rare. Today less than one percent remains intact in the continental United States (Nebraska Natural Legacy Project, 2005). Included in that one percent, approximately two percent of Nebraska's tallgrass prairie remains. Prairie covered 170 million

acres of North America before that land was plowed and subjected to development (National Park Service, 2018).

In 2012, the city government of Lincoln developed a master plan to create the Salt Valley Greenway and Prairie Corridor. The purpose of the plan is to create a greenway, a strip of undeveloped land used for recreation or environmental protection, south of the city to save and preserve a part of Nebraska's natural heritage (Lincoln Parks and Rec, 2012). The city of Lincoln intends to acquire land in the area of the proposed corridor, where tallgrass prairie once thrived, to connect two environmental resource and education centers. This land will either be purchased or donated for the project. Eminent domain will not be used to garner the land for this conservation project and the acquisition of this land will take some time. The estimated time for this project's completion in will be in 2025.

The Prairie Corridor project aims to assist with conservation of prairie, habitat, and wildlife in the area. Along with conservation, the corridor focuses on economic opportunity, habitat development, research, trail development, and outreach and education. Trail development and outreach and education will be the focus of my project. All of these benefits and more will come to the city of Lincoln and the Village of Denton as this project continues to grow.

Currently, Lincoln enjoys over 157 miles of trails (Lincoln Parks and Rec, 2012). These trails are used for recreation, education, and important connections between the city and rural areas of Lancaster county (Great Plains Trails Network). The new corridor trail will be approximately 10 miles long, starting at Pioneers Park Nature Center, passing through the Village of Denton and ultimately connecting to the Spring Creek Prairie Audubon Center. This 20-mile round trip journey would be wonderful for bicyclists and hikers to enjoy the outdoors and exercise, while bringing economic opportunity and ecotourism to the area. These nature

centers are a staple of learning about Nebraska's natural history. With the introduction of a new trail, comes the opportunity to acquire more educational information and increase community interest and involvement in outdoor activities and this unique ecosystem that surrounds them.

Spring Creek Prairie Audubon Center is an 850-acre tallgrass prairie nature preserve that was established in 1998. It is home to over 200 species of bird, 30 species of mammal, nearly 400 species of plants and much more wildlife. The mission of this nature preserve is to focus on conservation of the tallgrass prairie ecosystem and birds that rely upon it. The Audubon strives to conserve and restore habitats with a specific focus on birds. This 860-acres also lay witness to Nebraska's pioneer past. A rich history that includes the passage of nineteenth century pioneers who plodded along the Oregon Trail and the Nebraska City-Fort Kearney Cutoff. In 1860, the shortest route from the Missouri River to Fort Kearney opened and the road west was established by military freight contractors. The Spring Creek Prairie has preserved trail ruts from the former passage way that is recognized by the National Register of Historic Places. Preservation of the ruts was possible because the ground had never been plowed, and the education center allows both Nebraskans and visitors to learn about the area's natural and cultural history, as well as advocating for prairie preservation (Spring Creek Audubon Center, 2018).

The mission of Pioneers Park Nature Center is to provide a location where visitors can explore and interpret the natural history of Nebraska and the central great plains. The Nature Center is located on 668 acres of tallgrass prairie, woodlands, wetlands, and a stream. Established in 1963, this area is home to eight miles of hiking trails and exhibits housing non-releasable raptors, bison, elk, and white-tailed deer. Visitors to the center can hike the trails, observe local flora and fauna, and learn about and practice conservation ethics in a natural environment. "The mission of Pioneers Park Nature Center is to interpret the natural history of Nebraska and the central great

plains; to promote the enjoyment, appreciation and awareness of our natural environment; to practice and foster a conservation ethic; and to provide a sanctuary for wildlife and a peaceful retreat for people.” (Pioneer Park Nature Center, 2018).

One of the main goals of the Prairie Corridor Project is to create an easy access that links these two distinct nature centers. Although these centers have similar missions, they provide substantively different ways to experience our state’s natural history. In the process of creating this greenway that will encompass of 2,000 acres of native prairie between the nature centers, a bike and walking path will help bridge the distance (Lincoln/Lancaster County Comprehensive Plan, 2016). It is a goal that this path will become an attraction to Nebraskans, more than just a trail through the prairie. Using effective strategies, the plan will be to encourage conservation and education about the state and the nature within. This trail should be an educational journey into Nebraska’s natural history and demonstrate the importance of preserving prairie.

For this thesis, data was gathered from earlier trail designs and educational resources, and will be used to developed an outline and plan with purpose of getting people engaged, on the trail, and learning about the prairie. Using outreach techniques tested worldwide to create excitement about nature, a plan will be developed to determine what information about the Prairie Corridor will catch people’s attention, what technology can be incorporated and create easier use, and what stories are important to the history of the land. All of this used in answering the question, what is the best way to promote learning on the Prairie Corridor?

Methods

A systematic literature review of books, peer-reviewed journals articles, and online reputable publications were used to determine the type of education, trail design, theme, and style of the Prairie Corridor Trail. The final result will be represented in a flowchart (Figure 1).

A systematic review is a tool used for summarizing evidence to guide policy. The publications were gathered from the University of Nebraska-Lincoln's Love Library and the University library online database. The recommendations from these sources were summarized and developed into a trail plan that would attract visitors, keep them engaged and intrigued while hiking or biking. Different studies, techniques and styles were analyzed and selected based on the positive outcomes in previous research. All the studies collected for this review were relevant published and unpublished studies to limit impact of publication biases. Adobe Illustrator was used to visually represent the general design of the signage that would be along the trail (Figure 3).

Results

When framing the question "What is the best way to promote learning on the Prairie Corridor?" and developing an informational and effective trail plan for the future pathway literature and previous work should be studied to develop and complete a systematic review.

Literature Review

Interpretation

Interpretation is the idea of passing on information to an individual who does not have a background in the topic and making it easier for them to understand. Freeman Tilden, one of the first people to set down the principles and theories of Heritage Interpretation, he wrote in his book *Interpreting Our Heritage* that interpretation is "An educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information." There are many different styles of interpretation, but according to *The Interpreter's Handbook*, there are

only two types of interpretations on a trail: guided trail interpretation and self-guided interpretation (Grater, 1976, Chapter 5).

Guided interpretive programs are made to utilize personal contact between visitors and an interpreter or guide. Non-guided interpretive programs are created so visitors do not have to rely or interact with an interpreter or guide. In these cases, the visitor can make their own connections through different resources, media, and objects (Roberts, Mearns, Edwards, 2014). In an unguided tour, an individual can tailor their own educational experience to meet their own interests (The Encyclopedia of Ecotourism, 2001). Many people believe that “there is no substitute for the personal touch in interpretation.” The disadvantages to self-guiding include: Lack of personal contact with an interpreter, which may lead to unanswered specific questions and the facility is often more likely to be vandalized (Grater, 1976).

To determine the differences between the effectiveness of the types of interpretation researchers at Kruger National Park, South Africa looked at the differences of guided versus non-guided interpretation. They compiled a number of previous studies and determined six categories of effective interpretation. True effective interpretation should influence one or more of the categories of effective interpretation which include, enhance visitor experiences, protect resources at sites, protect visitors, increase public support for an agency and its management policies, add to or broaden visitors’ perspectives about a place or an idea, and finally, enhance an individual’s knowledge and foster positive attitude and behaviors. These categories were then formed into four goals. The aim of the research was to compare the effectiveness of guided and un-guided interpretation using these goals as a measurement of the effectiveness. This particular study at Kruger National Park (KNP) produced a study that measures visitors’ perceived satisfaction, knowledge gain, attitude and behavioral intentions. Visitors of KNP were given

post-visit evaluations after guided interpretations were conducted or unguided visitors. The results showed that guided interpretation was found to be more effective in visitor satisfaction, but there were only marginal differences in effectiveness in relation to knowledge gain, attitude change and intent to modify behavior (Roberts et al. 2014).

A report by the National Park Service in 2003, states that non-personal interpretation reached a higher proportion of park visitors. Only 22% of all park visitors talked to a ranger or participated in a ranger led program. Park visitors that participated in non-personal interpretation reported that they had viewed brochures, visitor center exhibits, way-side exhibits, and self-guided tours (Forist, Littlejohn, Baxter, Machlis and Gramann, 2003).

Unguided Interpretation

Recognizing the marginal difference between guided and unguided interpretation and the higher proportion of National Park visitors that participated in non-personal interpretation, this research will move onto examining research that will allow learning to be more effective on the Prairie Corridor trail, without the training or availability of an individual to interpret the trail. The two main types of unguided tours are signage and audio. A study done at Carlsbad Cavern National Park evaluated the effect of an interpretive audio tour on visitor knowledge and social behavior within the park. In informal learning, people tend to want communication to get to the point as quickly as possible (Falk, Moussouri, & Coulson, 1998). The Carlsbad Cavern study looked at the informal settings of parks, science centers, and museums and tried to change up the way the humans visiting the area interacted with the educational materials. The study found that visitors' knowledge regularly increases from 6.2 to an 8.4 on a 12-item knowledge quiz after visiting a museum. When listening to audio scores increased to 10.3. Based on overall observations, audio tour users and nonusers did not differ substantially in interactions with other

individuals. It was found that if a visitor thinks that the audio tour conveys all the important information, they might not explore and read signs that could have other information. Audio tours may also discourage visitors from interacting with one another because they're involved with their headphones. When visitors just read signs, they have more of an opportunity to interact with the strangers around them (Novey, 2006). One major drawback is that audio tours limit interactions with people in the same visiting party. The study noticed that audio tours are user-friendly and nearly all tour users found the audio to be informative and fun. The study also discovered when comparing audio guidance to learning from signage, individuals with the audio were more likely to continue to learn from both the audio and the signage. The learning experience with audio was seemingly just enhanced. There were limitations when trying to find research on knowledge increases when visitors were exposed to audio alone.

Signage is one of the oldest and most popular means of self-interpretation, but according to some studies it is also one of the most effective ways to learn. Although the audio tour was fun for guests in the Carlsbad Cavern study, the goal was to encourage guests to learn (Novey, 2006). This goal was still achieved by interpretive signage. According to the National Park report released in 2003, 20% of all visitors reported using audio-visual programs, newspapers, and bulletin boards, while 68% of all park visitors learned from wayside signage and self-guided tours (Forist et al., 2003). More individuals were reached by signage and self-guided tours. Some visitors prefer approaching a sign to talking to a uniform person (Knudson, 2003). Interpretive communications can target affective and cognitive learning components that allow them to connect personally to objects, places, and culture (Jensen, 2006). Interpretative signage can do this by illuminating a power of place and its significance, strengthening awareness of cultural and natural resources, pride in community and local heritage. Interpretive signs are also self-

sufficient, there is no need for staff, and the messages the sign produces can be viewed at the visitor's convenience (Adams, n.d.). The Interpreter's handbook would also include that signs are appreciated by visitors that do not carry descriptive literature.

Theme

Nature and historical interpreters have accepted the idea that beauty is in the "hard to perceive" order of the universe. The visitors that interpreters share their interpretations with have similar preferences, but need to be guided to an acute perception (Knudson, 2003). That is their job. In the book, *Interpretation of Cultural and Natural Resources, Second Edition*, Knudson discusses 'What to Interpret' and how to identify the major themes. "Each park, forest, museum, camp, historic building, and cave has its own characteristic values and uniqueness." Professional interpreters find and study a place so they can tell visitors stories, legends, history, and nature. Spring Creek Prairie Audubon Center and Pioneers Park Nature Center both have designated themes and missions. When picking a theme for the new corridor trail plan a combination of the nature centers themes would allow visitors a shared knowledge between the nature centers and a deeper connection to the area around them. The mission of Spring Creek Prairie Audubon nature preserve is to focus on conservation of the tallgrass prairie ecosystem and birds that rely upon it. The Audubon strives to conserve and restore habitats with a specific focus on birds (Spring Creek Audubon Center, 2018). Pioneers Park's mission is to provide a location where visitors can explore and interpret the natural history of Nebraska and the central great plains (Pioneer Park Nature Center, 2018). Combining these missions with the goal of the Corridor as a whole, assist with conservation of prairie, habitat, and wildlife in the area. Along with conservation, the corridor wants focuses on economic opportunity, habitat development, research, trail development, and outreach and education (Lincoln Parks and Rec, 2012). The overlapping

themes that develop are: Prairie animals, prairie plants, prairie management, and Nebraska history.

Design

The design of the signage is one of the most important factors in the creation of a trail plan. According to Charles Sanders Peirce, an American philosopher, each sign has three elements. The first is the sign itself and its presence in society. The second is what the sign stands for, and the third is what the sign's meaning based on interpretation (Leskies, 2011). When developing a sign for the Prairie Corridor, these three elements must be examined. Making sure signage has the ability to inform visitors and captivate their attention has been deemed important. Research that has been conducted on people's memory has shown the impact of picture on the ability to recall information (Standing, 1973). In a memory recall experiment, people were split into three groups and shown either 1000 words, 1000 regular pictures, or 1000 vivid and out of the ordinary pictures. The results of memory recall experiment were that an average of 880 vivid photos were remembered. There was only an average of 615 words recalled at the end of the experiment (Standing, 1973). Images speak loudly and Standing's study proves that. Although, it is understood images influence memory recall, images can also be misconstrued. This is why, there are more techniques to create an effective sign.

In Salt Spring Island, British Columbia a nine-month study was completed to determine the design of interpretive messaging in a popular park. The goals of the signs were to educate visitors on the importance of the park's fragile ecosystem, offer correct historical and cultural information and manage behaviors of the park visitors (Higgins, Brewster, Buxcey, Robinson, 2015). Participants were given a survey to complete after visiting the area. The respondent's results suggested they agreed with the content of the signs, the signs were easy to read, and the

information was interesting, the signs also made the park visits better. Negative feedback suggested the signs they used were “too wordy.”

A resource from the Center of Design and Interpretation from the Rocky Mountain Region, allows interpreters to use tricks and tools in signage design. When focusing on design and layout the graphics should speak louder than the words on the sign. Color grabs and directs the visitor with focal points, center of interest that draws first attention, and visual flow. Using contrasts in color, value and saturation make certain areas of signs pop and stand out (Rocky Mountain Region, n.d.). The Rule of Thirds suggests that on a sign one third should be text, one third should be graphics, and one third should be empty space. The Rule of Thirds, is known in the photography, art, and design world and it deals mainly with aesthetic. Its roots can be traced back to the 18th Century. Text on a sign should be arranged in 40-75 word sections (Adams, n.d.). Studies have been done on exhibit labels in museums to determine how likely people will pay mindful attention to sign information. Chunking, breaking information into sections, has been shown by multiple studies to increase average viewing time of labels (Screven, 1992). There should also be simplicity within the sign. It is suggested that 150 words is the maximum number of words on a sign to make sure the reader is not overwhelmed.

Placement

Interpretive signs serve a variety of different functions for communities. Interpretive signs illuminate the power of place, with a clear message to inform the public, a visitor will have more of a reason to stop and inform themselves on the site’s historic, cultural and natural resource significance (Adams, n.d.). Interpretive signs point out features of interest along the trail and educate trail users about those features, which can be natural, cultural, historical, or recreational. Interpretive signs can also direct users to avoid impacting ecologically sensitive

areas and educate recreational users about the environment, thereby creating a new purpose for recreational trails (Yukon, 1995). Since this trail will eventually be paved into a bike path and accessible for someone in a wheelchair, the National Park Service suggests have the exhibits to be installed at heights and angles favorable for everyone (National Park Service, 2009).

When it comes to placement of signs there needs to be decision making about what signs go where. The themes chosen for the Prairie Corridor trail are prairie management, prairie animals, prairie plants, and Nebraska History. Site-specific interpretation is an effective exhibit that creates a meaningful connection between the visitor and the surrounding landscape. Signs in these areas are there to attract and focus attention on the site, not the sign itself (Adams, n.d.). Prairie management focused signs will need to be place in areas where research on different management techniques is being tested. Something else that needs to be researched is how far do people walk. This trail will be about 10 miles one way. According to the 2002 National Survey of Bicyclist and Pedestrian Attitudes and Behaviors, by the National Highway Traffic and Safety Administration says the average length of a trip is 1.3 miles walking. This result comes from a park in Chicago and does not look at bicycle distance.

The Trail Plan

In this systematic literature review, the research results suggest creating an unguided trail with interpretive signage as more of an effective means to educate and interpret a message while on the new corridor trail (Figure 1). Audio is a great means of unguided interpretation, but it can be better established once interpretive signs are already established. The next steps in this framework for trail design would be to look at the suggestions for design, theme, and placements of the signs.

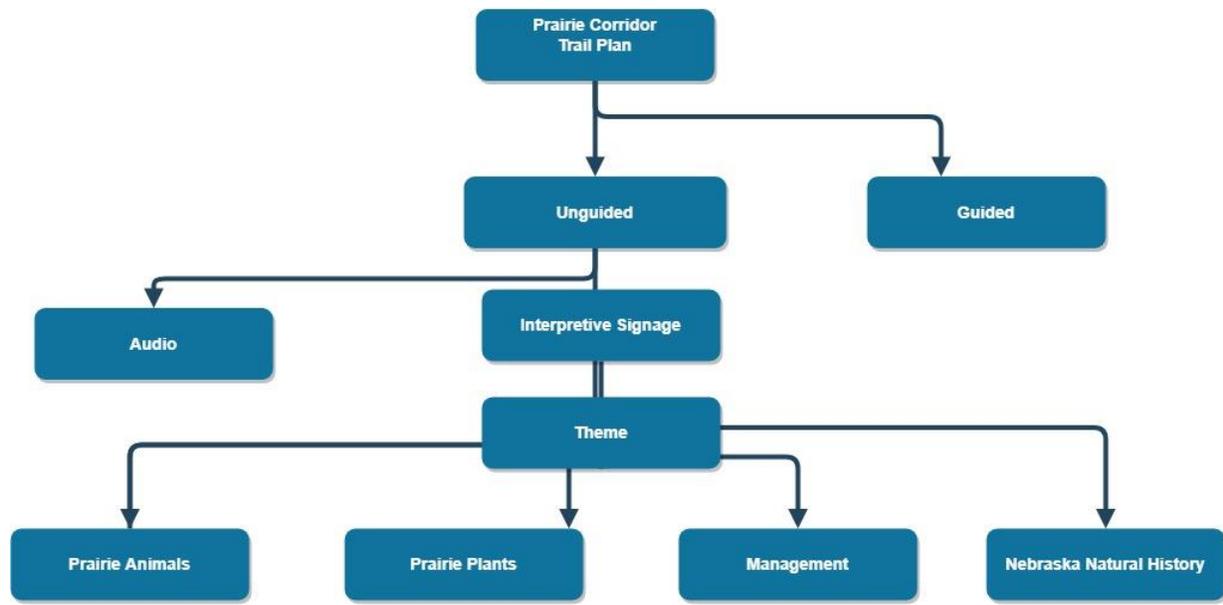


Figure 1: Literature Review Flowchart

Based on the proposed trail from the city of Lincoln’s Master Plan, the themes developed from the readings, and the previously stated nature centers. I decided that the Prairie Corridor should have eight interpretive signs along its route. Two signs that are focused on educating about prairie animals, two signs that focus on prairie plants, two signs that have Nebraska history information, and two prairie management interpretive signs (Figure 2). All the signs should have a unique message on them about the place where the sign is placed so visitors can make their own interpretive connections.

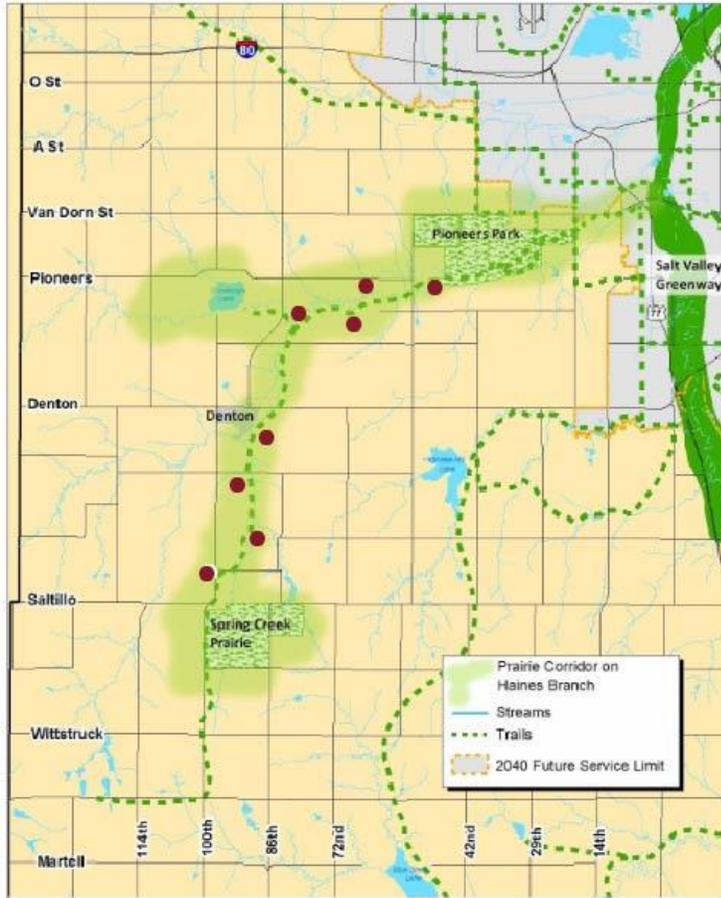


Figure 2, shows the placement of interpretive signage along the proposed Prairie Corridor trail.

Using others' research and best practices, a template for interpretive trail signage was developed based on the literature suggestions (Figure 3). When the signage is placed on the Prairie Corridor, the images should be changed to fit the information and the location. Images used on the sign are courtesy of the local Platte Basin Timelapse project and Spring Creek Prairie Audubon Center.

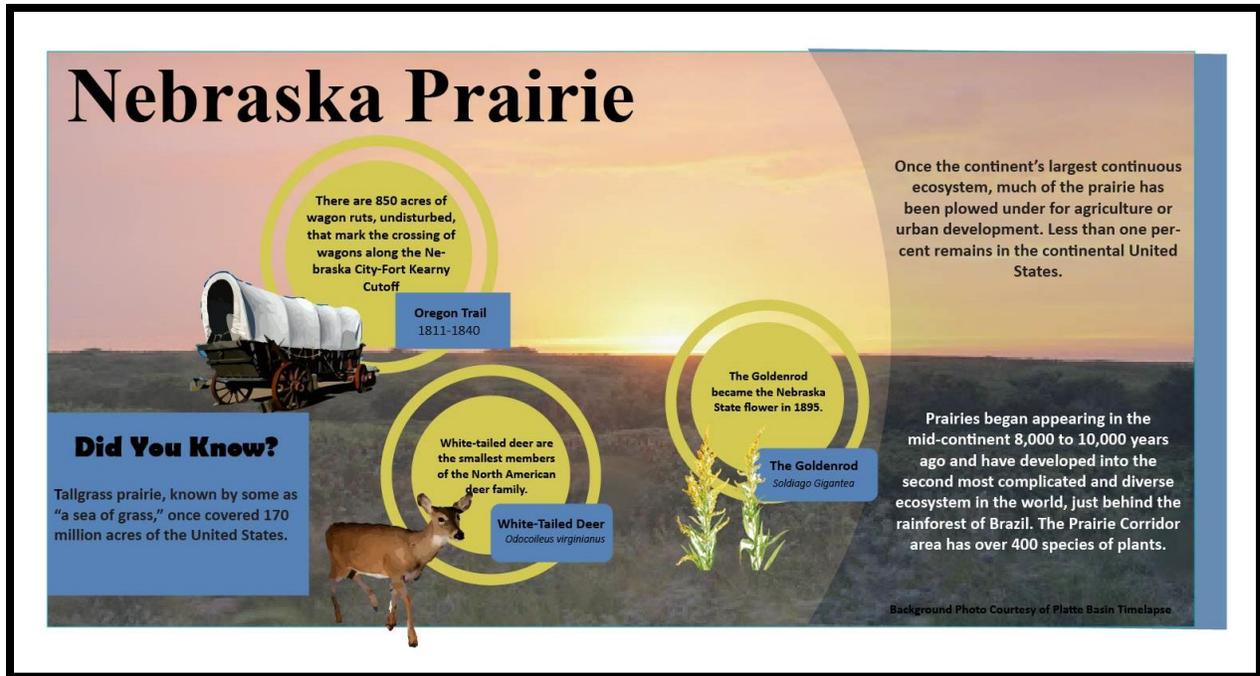


Figure 3: An Interpretive Sign Template

Discussion

The objective of this thesis is to develop a plan to determine what information about the Prairie Corridor will attract visitor attention, which technologies can be incorporated as tools for learning, and which stories are most reflective of the history of the land. This trail plan examined the best technology for attracting public attention to the Prairie Corridor and to disseminate the important lessons that this unique plot of land provides.

Interpretation, such as that provided for in this plan, provides a link between a visitor who lacks a background in a topic and the surrounding environment, enabling the visitor to better understand and appreciate that which they are experiencing. Typically, there are two types of trail interpretations, guided and self-guided interpretation. Self-guided interpretive programs are those that do not require reliance on or interaction with a guide. This allows visitors to freely and independently make their own connections using various resources, media and objects.

The average walking distance of park visitors is approximately 1.3 miles (National Highway and Traffic Safety 2002), so a ten-mile trail would be too lengthy for the general public, rendering a guided interpretation as impractical. Therefore, for the Prairie Corridor Plan a self-guided tour using interpretive signs was selected.

Eventually, the Corridor trail will be a paved trail, allowing for bicycle traffic and potentially wheel chair access. The National Park Service recommends that signage be placed at levels and angles to accommodate all individuals. Placement of 32 inches would meet this recommendation and allow cyclists to view the interpretations without frequently stopping or dismounting from their bikes.

Spacing eight signs at intervals between one to two miles would allow walkers time to reflect upon their surroundings and anticipate the next interpretive display. As the distance between Pioneer's Park Nature Center and Spring Creek Prairie would be too lengthy for most patrons, the interpretive displays will provide visitors with an opportunity to engage in a tour of self-selected length even as the Corridor is being developed.

The self-guided interpretation signage was decidedly split into four themes: prairie animals, prairie plants, prairie management, and Nebraska natural history. Although, there are four themes, it makes up one trail narrative. These four themes are greatly impacted by this corridor project and are something the public should be educated on. Research on management, plants, animals and natural history is being studied in the area and if visitors can someday see the research firsthand, a deeper understanding and connection would be made to the prairie.

Conclusion

The initial goal of this thesis was to promote public education regarding the new Prairie Corridor. When determining a final design of the trail plan along the Prairie Corridor,

considerable information was available. The design was based upon creating a systematic research review and creating a trail plan for the proposed Prairie Corridor project (Figure 1). The Prairie Corridor project aims to assist with conservation of prairie, habitat, and wildlife in the area. This generational conservation effort is important in growing the city of Lincoln's trail system, but the bigger impact will be encouraging Nebraskans to actually engage and interact with their environment, and to understand the importance of prairies, historically and today. Developing this systematic literature review to determine what information about the Prairie Corridor will command the attention of the public and promote learning was a significant task. Multiple studies that have been conducted on interpretation and displays. In hindsight, a narrower topic might have been less problematic.

I discovered there exist a variety of ways to interpret information on a trail setting. Guided, unguided, audio, visual, and deciding themes. I selected the signage avenue for my trail design because the objective of trail signing is to improve the trail user experience, increase confidence and comfort in navigating the trail system, promote recreation use, protect the environment by directing visitors to stay on the trail. Using the readings and suggestions from past studies and the National Park Service, I developed a sign that could be used on the Prairie Corridor that is appealing to visitors and captures their attention (Figure 3).

Research shows audio interpretation is better with signs. Without the initial signs it is more difficult to determine the theme of the audio. With the time limit on this project, I was unable to develop an outline for an effective audio guide. To create an effective audio guide, one must have a visual guide alongside. Sign development is tricky. In the future, I hope there could be development of a "Music on the Prairie Tour" and a "History of the Prairie Tour" that would allow bicyclists to enjoy the history of the area without constantly stopping for signs.

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